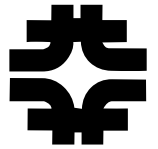


Status and Plans for the Future

Thomas R. Kobilarcik

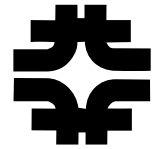
Fermilab

March 29, 2005



- The MiniBooNE beamline branches off the 8 GeV line in the MI tunnel.
- Beamline Status.
 - Residual dose rates are low.
 - First horn failed and has been replaced.
 - Two components have failed.
- Plans for the future.
 - Continue running through FY06 (at least).
 - Improve target air handling system.
 - Construct third horn.

MiniBooNE - Beamline

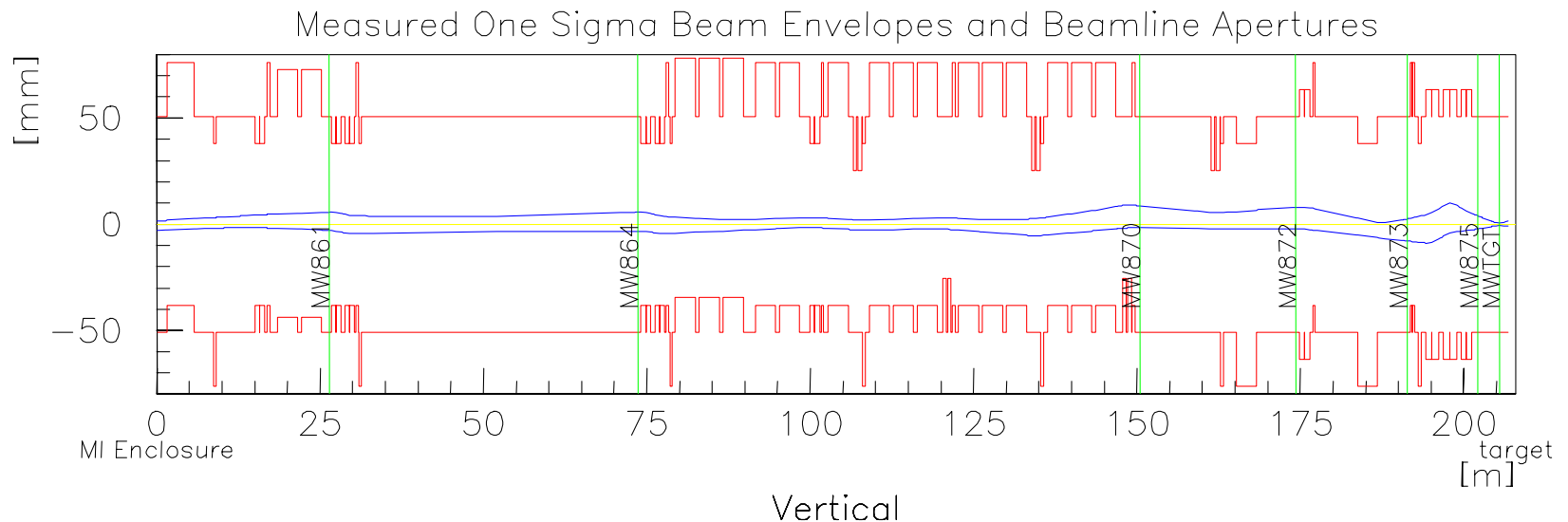


- Transported $4.8E20$ protons (as of March 21).
- Residual dose rates are low.
 - Background rates in transport region are below 2 mrem/hr.
 - Background rates in target hall are 20 mrem/hr near the final focusing triplet.
 - This is due to:
 - Excellent beamline design (Al Russell).
 - Continuous control of beam positions (AutoTune).

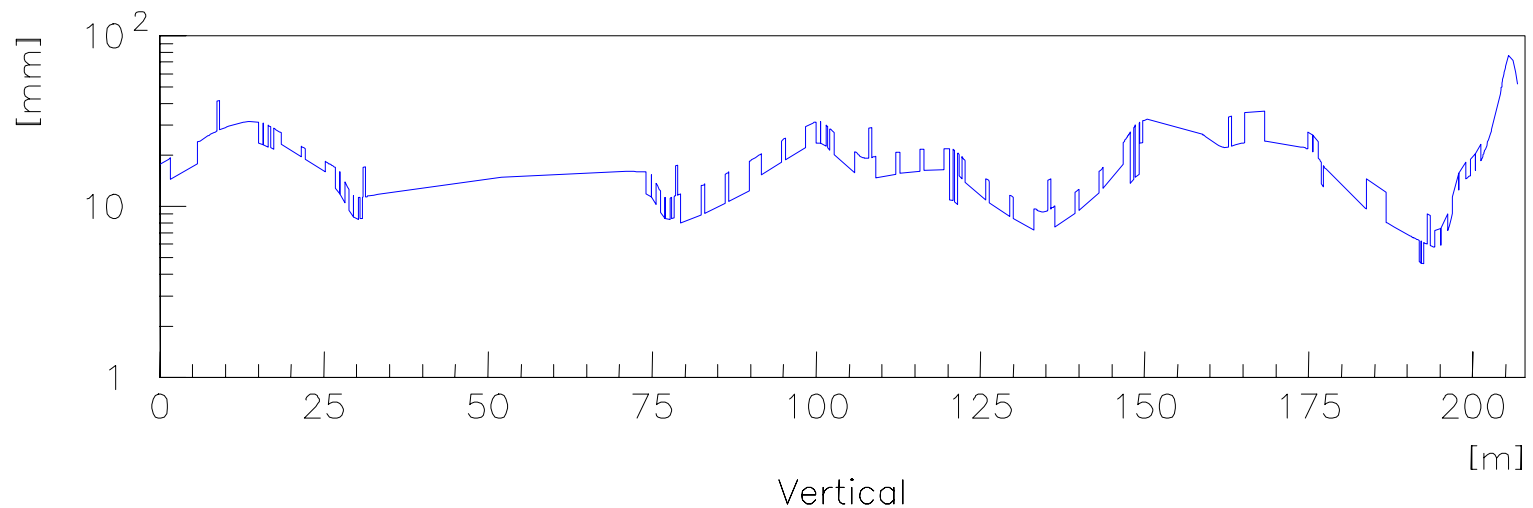
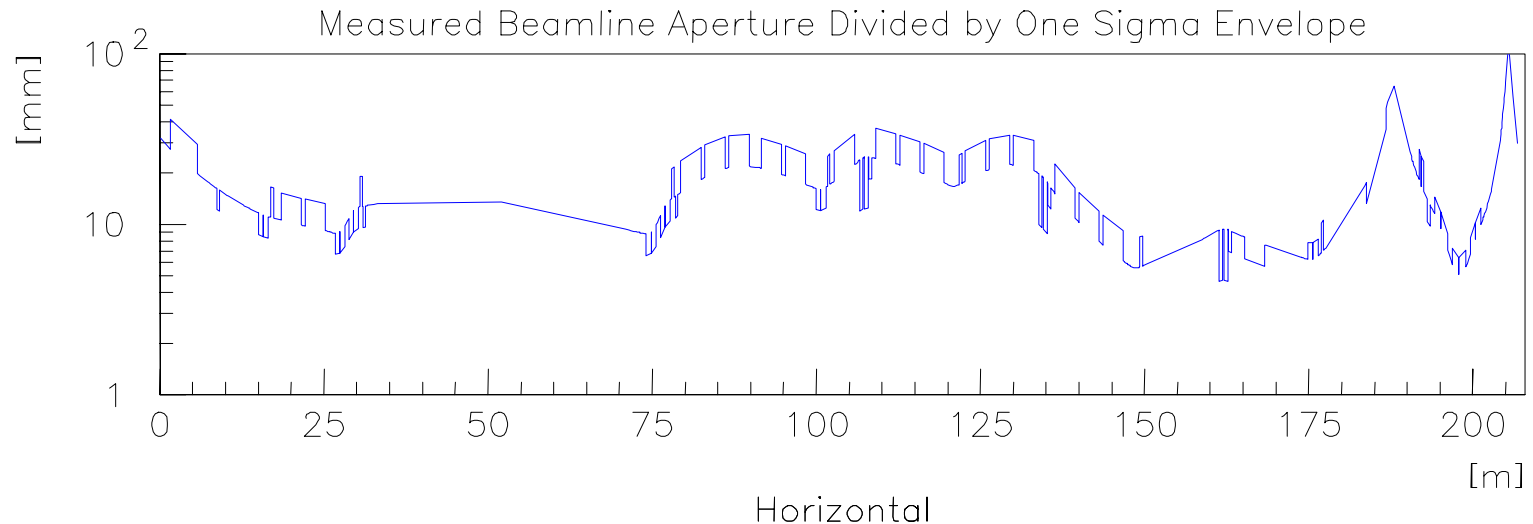
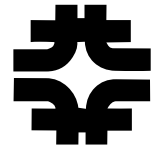
MiniBooNE - Transport



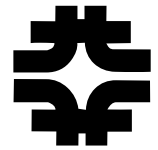
- Sufficient clearance between particle beam and apertures to allow for controlled and uncontrolled beam movement.



MiniBooNE - Transport

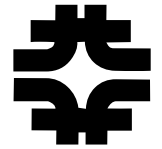


MiniBooNE - AutoTune



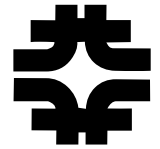
- Algorithm used successfully in previous beamlines (KTeV, WideBand).
 - Change trim magnet b_i .
 - Measure change in beam positions at locations x_k, x_{k+1}, \dots
 - Construct correlations: $x_k = m_{ki} * b_i$
 - Invert: $b_i = m_{ik}^{-1} * x_k$

MiniBooNE - Horn



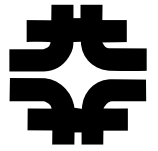
- First horn failed.
 - Operated for two years.
 - Saw 96 millions pulses, 84 million with beam.
- Second horn is installed and operating.
 - Currently has about 2.7 million beam pulses.
- Third horn is expected to be tested during Fall 2005 shutdown.
- Rep rate of horn limits operation to 5 Hz (average).

MiniBooNE – Horn



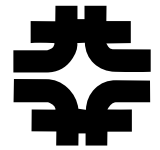
- Removal of first horn and installation of second took two days total.
 - Followed procedure developed during horn removal dry run.
 - Several weeks of staging and prep work.
 - This resulted in low integrated dose for the job.
 - 327 person-mrem total (estimated 449 person-mrem).
 - Major sources of exposure are identified. Procedure is modified to reduce exposure.

MiniBooNE – Component Failures



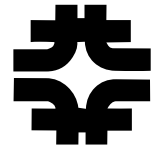
- Cooling line ruptured on Q874 (second magnet in triplet).
 - Rupture occurred on Nov. 27, 2003.
 - Lost approximately twelve hours of beam time.
 - Spare parts were available.
- Multiwire got stuck part way in beam.
 - Lost about four hours of beam time.
 - Removed device.
 - Replacement available, will be installed when convenient.

MiniBooNE - Future



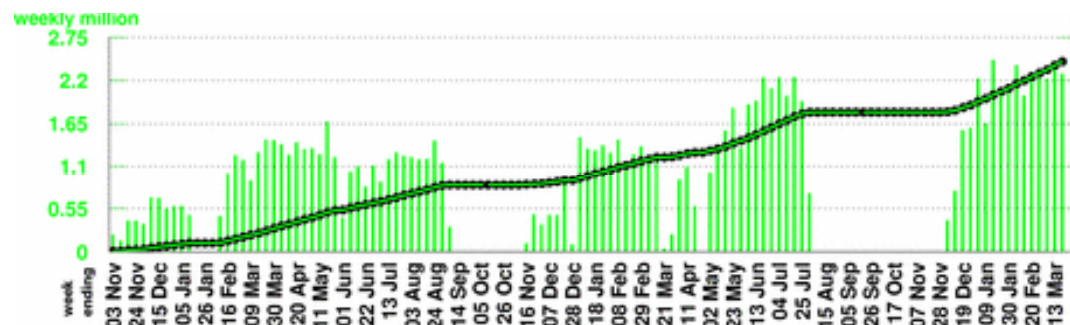
- Improve target air handling system
 - A system to dehumidify the target cooling air has been designed.
 - System has been reviewed by safety, mechanical support, and instrumentation.
 - Procurement of parts underway.
- Fabricate and test third horn.
 - Inner conductor has been welded
 - Expect fabrication to be complete by mid-summer.
 - Plan to test horn during autumn 2005 shutdown.
- Run through FY06 (at least).

MiniBooNE - Summary



- The beamline has performed well.
 - Residual dose is low.
 - Components perform reliably.
- Plan to continue running through FY06 (at least)
- We will continue to improve systems based on experience.
 - Improving target air handling system.
 - Second and third horns were modified based on experience with first horn.

MiniBooNE - Performance

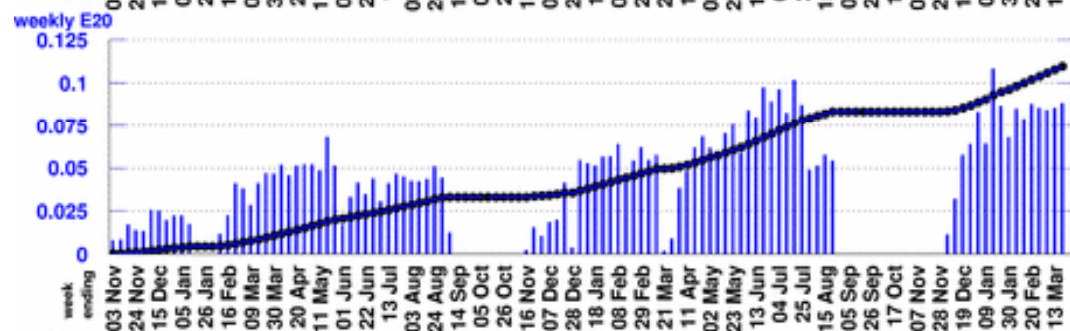


Number of Horn Pulses

To date: 115.33 million

Largest week: 2.46 million

Latest week: 2.29 million

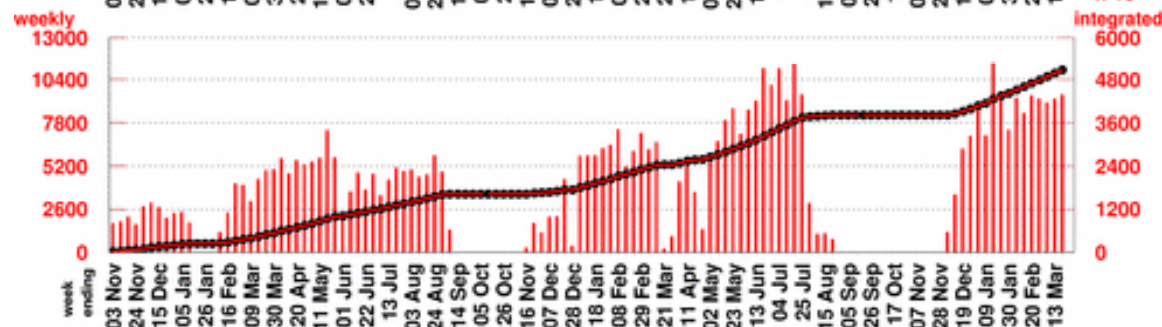


Number of Protons on Target

To date: 4.8295 E20

Largest week: 0.1084 E20

Latest week: 0.0881 E20



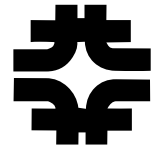
Number of Neutrino Events

To date: 506934

Largest week: 11447

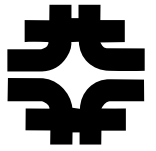
Latest week: 9503

MiniBooNE - Horn



- Horn and outer coffin being transported to TSB.





Arial – Size 36

- Arial Unicode MS – Size 28
 - Arial Unicode MS – Size 24
 - Arial Unicode MS – Size 24
 - Arial Unicode MS – Size 20
 - » Arial Unicode MS – Size 20